

REMARKS

Claim 1 is allowed. The Examiner has indicated that Claims 5 and 7-10 contain allowable subject matter.

Claims 2, 3, 6, 23, and 24 – 28 are rejected as anticipated by Yializis et al. US 4,842,893. Claims 4 and 20 are rejected as obvious over Yiazilis et al. in view of Kelly et al. US 4,101,925.

Background

Applicant has discovered, among other things, advantages to be gained by moving an energy emitter, such as an electron beam gun, between stand-by and deposition locations. For example, by moving an electron beam gun out of a deposition location, the deposition location is free to be used by other devices, such as a second electron beam gun that has been made ready for deposition (e.g. pre-heated, new material added, etc.). In one application, ion-assisted electron beam deposition, an electron beam achieves deposition, while an ion source may concurrently bombard the substrates with ions. The ion source may be irradiating the substrate even while the electron beam guns are moved into and out of the deposition location. Accordingly, any preparation time required to make an electron beam gun ready for deposition may occur in parallel with other deposition processes, thus minimizing delay.

In contrast, Yializis et al. do not disclose moving an energy emitter to a stand-by location. Yializis et al. disclose a method for coating substrate targets wherein the targets rotate on a drum or disc. For example, in Fig. 1, targets on drum 31 move between a monomer evaporation station 32, an aluminum evaporation station 41, and an electron

beam curing station 33. At station 32, a liquid phase monomer is flash vaporized and moved by differential pressure towards targets on the drum passing by that station. At station 41, an electron beam vaporizer deposits aluminum on targets on the drum passing by that station. At station 33, electrons impinge on targets moving by that station.

Yializis et al. do not disclose an ion source, nor ion-assisted deposition. While Yializis et al. disclose: “[F]lash vaporization retractor 130, which positions the vaporizer the desired distance relative to the drum surface” (Col. 8, ll. 63-65), Yiazilizis et al. do not disclose moving the monomer station to a stand-by location. Furthermore, the monomer station does not contain an energy emitter such as an electron gun. Yiazilizis et al. do not disclose moving an electron beam gun to a spaced apart location. Yiazilizis et al. do not disclose moving any of the deposition systems out of the stations identified, such that another system could use the station. Thus, for example, the area of electron beam curing station 33 can only be used by the single electron beam gun mounted there.

Rejections

The rejections are broadly based upon the notion of positioning or aiming an evaporator towards a target. (Office Action, pg. 2.) Claims 1, 2, 6, 23, 25, and 27 have been amended to consistently use the terms “location”, “position”, and “move” to obviate the grounds of rejection. For clarity, where appropriate, the claims have further been amended to recite that the locations are spaced apart. Thus, the claims as amended, do not read on merely aiming an otherwise fixed evaporator towards a substrate. The basis of the rejection is thus moot. However, in order to progress the application, Applicant notes several of the further distinguishing points.

The rejections of independent claims 2, 23, and 25 are based, in part, on Yiazilis et al. disclosing an ion gun. The Examiner points to Yiazilis et al. Col. 7, ll. 15-40 as the disclosure for an ion gun. (Office Action, pg. 3.) However, the referenced columns relied upon disclose an *electron gun*. An electron is not an ion and the distinction is readily apparent by reference to processes such as ion-assisted electron beam deposition discussed above. The Examiner has not shown, and the Applicant has not found, a disclosure in the references that meets the claim limitations including an ion source. Towards that end, Applicant notes that a “thermionic” gun (see Yiazilis et al. col. 7, l. 39) is merely one type of electron gun, not an ion gun. Therefore, the basis of the rejection of claims 2, 23, and 25 is improper because the prior art relied upon does not teach the limitation of an ion source. Thus, Applicant submits that Claims 2, 23, and 25 are in condition for allowance and solicit notification of the same.

Furthermore, Claim 23 includes first and second evaporators that move into the same location. For example, claim 23 recites: “ceasing deposition of the first material; moving the first evaporator to a stand-by location within the chamber remote from the ion source; *moving the second evaporator to the source deposition location*; depositing a second material from the second evaporator on the one or more substrates.” In addition to the ion source absent in the prior art relied upon, the prior art does not disclose first and second evaporators that move into and out of a single location. Accordingly, Applicant submits that Claim 23 is also allowable on these grounds and requests notification of same.

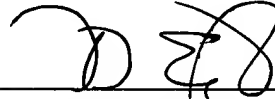
Claim 24 is directed to first and second evaporators disposed at locations laterally spaced. The first and second evaporators are alternately exposed and shielded to effect deposition. For example, claim 24 recites: “shielding the one or more substrates from the first evaporator positioned at the stand-by location; and depositing a layer of second material on the one or more substrates.” Among other advantages, this arrangement allows one evaporator to be preparing for deposition while the other is providing deposition. Yializis et al. does not disclose such a configuration or method. Accordingly, Applicant submits that Claim 24 is allowable and requests notification of the same.

Claim 25 is directed to a carrier apparatus on which an electron gun is moveable to different locations. For example, claim 25 recites: “positioning a generally planar electron gun carrier”. In addition to the ion source absent from the prior art relied upon, the prior art of record does not disclose a carrier apparatus utilized to move an electron gun between separate locations. Applicant submits that Claim 25 is allowable and requests notification of the same.

Applicant submits that the rejections of the independent claims have either been traversed or obviated by amendment. The remaining claims depend either directly or indirectly from the independent claims and are patentable at least by virtue of their dependence without need to resort to the further patentable features therein.

Applicant submits that the application is in condition for allowance and requests notification of the same.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'D. Joseph English', written over a horizontal line.

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